

CLASS 235, REGISTERS**SECTION I - CLASS DEFINITION**

This class includes machines employed for ascertaining the number of movements of various devices or machines; also, indicating devices where the purpose is to disclose the numerical extent or quantity of movement of a machine and where the device is separate and independent of the machine whose movements are to be noted; also organized machines, such as, cash-registers, fare-registers, voting machines and calculators having registering or counting devices as essential or important elements and having in addition certain other features necessary to make up the complete machines for the purposes desired. In this class are also recording calculating machines, as--recording cash-registers, and recording voting-machines, which are classified herein instead of in classes providing for the particular recording means, by reason of the analogy of the machines as entireties to other machines (cash-registers, etc.), in this class. These recording devices usually, but not invariably, comprise attachments for printing numbers.

Registers, per se, include attachments to machines where the purpose is to ascertain or count the number of movements thereof, such as engine-counters, counters for printing-presses, etc. They also include devices comprising indicating hands or pointers (or equivalents thereof), whether moved regularly or irregularly, forward or backward, in cooperation with a scale or index to disclose the numerical extent of movement.

In addition to registers, per se, the class is subdivided into various groups according to the functions of the machines classified therein.

The registering mechanisms employed in cash-registers (with the exception in Subclass References to the Current Class, below) and calculators are capable of being operated to different extents--that is, if they comprise drums having numerals from "0" to "9" on their peripheries they may be operated one step or more up to the limit at one operation, dependent upon the key or equivalent actuated. Moreover, any drum or drums (or equivalent) in the set representing different orders, as units, tens, etc., or dollars and cents, may be operated either singly or together. In these respects the registers are different in their operation from those in the other groups, where the actuator is in operative relation only with the wheel or other device of lowest order and moves the same one step at a time, the tens being "carried" as this or any other wheel completes its rotation.

Cash-registers, classified in this class, are classified machines employed in mercantile establishments for the purpose of keeping a check upon the financial transactions. These machines usually comprise keys or equivalents, registering devices, indicating-tablets, or drums to disclose to the purchaser the amount of the sale, a cash-drawer, a bell or other alarm, and various subordinate devices mainly for the purpose of compelling the clerk or cashier to completely and correctly operate the machine. It also includes machines where an autographic record of the transaction is made upon a movable strip of paper, together with means for moving the paper, a cash-drawer, and other subsidiary devices.

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 13, for a cash-register wherein a separate and independent register is connected to each key.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- 15, Brushing, Scrubbing, and General Cleaning, subclasses 250.001+ for attachments for cleaning windows of registers, where only the features of the register casing and window are claimed that provide for attachment and operation of the cleaning element. When other register features are claimed, for example, an operating connection with the register mechanism, classification is in Class 235.
- 73, Measuring and Testing, for all registering measuring instruments wherein the register is claimed broadly or specifically in combination with significant measuring structure of the type provided for in said class. Class 235 includes only registering mechanism, per se, for measuring instruments. However, since it is usually necessary to include with the register some conventional measuring element to define a locus or setting for the register, the mere naming in a claim or claims of such conventional measuring element or its description in general terms will not exclude such claims from Class 235.
- 137, Fluid Handling, subclasses 551+ for fluid handling apparatus including a register in combination.

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| <p>166, Wells, subclass 64 and 250.01+ for well processes and apparatus involving registers or counting means.</p> <p>221, Article Dispensing, particularly subclass 7 for article dispensing devices, not otherwise provided for, combined with dispenser operated registers.</p> <p>222, Dispensing, particularly subclasses 24 through 38 for registers combined with significant dispensing features.</p> <p>234, Selective Cutting (e.g., Punching), subclasses 4+ for a selective punching device having means to totalize incremental values assigned to the different punches (for justification control); subclass 21 for a selective punching device having means to register the number of its operations (for control purposes).</p> <p>345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 418 through 475 for computer graphics processing.</p> <p>374, Thermal Measuring and Testing, for registering thermal measuring instruments wherein the register is claimed broadly or specifically in combination with significant measuring structure of the type provided for in said class. Class 235 includes only registering mechanism, per se, for measuring instruments. However, since it is usually necessary to include with the register some conventional measuring element to define a locus or setting for the register, the mere naming in a claim or claims of such conventional measuring element or its description in general terms will not exclude such claims from Class 235.</p> <p>399, Electrophotography, subclasses 75+ for machine operation of an electrophotographic device reproducing copies, particularly subclasses 79+ for accounting of usage or copies produced.</p> <p>453, Coin Handling, appropriate subclasses for coin handling subcombinations.</p> <p>700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for generic data processing control systems; and subclasses 90-306 for particular applications of data processing systems or calculating computers especially subclasses 245-264 for data processing of robot control systems.</p> <p>702, Data Processing: Measuring, Calibrating, or Testing, appropriate subclasses for data processing systems or calculating computers utilized to affect a measuring, testing, or</p> | <p>704, Data Processing: Speech Signal Processing, Linguistics, Language Translation and Audio Compression/Decompression, subclasses 200+ for artificial intelligence systems that process speech signals.</p> <p>706, Data Processing: Intelligent Processing Systems and Methods, various subclasses for artificial intelligence systems that represent, apply, and acquire knowledge.</p> <p>708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 1+ for hybrid computers; subclasses 100+ for digital calculating computers; and subclasses 800+ for analog computers.</p> <p>714, Error Detection/Correction and Fault Detection/Recovery, subclasses 1+ for reliability and availability, fault recovery, locating, and avoidance in digital data processing systems.</p> | <p>calibrating operation of an external device or quality.</p> |
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- SUBCLASSES
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| <p>1</p> <p>2</p> | <p>This subclass is indented under the class definition. Subject matter not elsewhere classifiable.</p> <p>This subclass is indented under the class definition. Cash-registers embodying both a register and a recording attachment or an attachment for printing the amount of the sale registered.</p> | <p>SEE OR SEARCH THIS CLASS, SUBCLASS:</p> <p>58+, for calculators having recording mechanism.</p> |
| <p>3</p> <p>4</p> | <p>This subclass is indented under subclass 2. Cash-registers having in addition an attachment for feeding, printing, and delivering from the machine a check showing the amount of the sale, together with additional data, if desired, such as the date of the transaction, etc.</p> <p>This subclass is indented under the class definition. Machines constructed like cash-registers, but having the register replaced by a recording device for preserving a record of the sales.</p> | <p></p> |
| <p>5</p> | <p>This subclass is indented under subclass 4. Cash-recorders containing a movable strip of paper on which a memorandum of the transac-</p> | <p></p> |

- tion is manually made, together with devices ordinarily found in cash-registers for moving the paper and also, if desired, other features characteristic of cash-recorders.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 520+ for a machine in which an autographic record of a registered transaction is made upon movable strips of material, either singly or in duplicate, one or more of the strips being rolled up in the machine, and comprising nothing more than the strips of paper, together with a means for moving the same and rolling them within the machine.
- 6** This subclass is indented under subclass 7. Cash-registers including two or more separate and distinct attachments for registering the sales of different clerks or departments, a single set of cash-keys, and separate keys or other devices whereby the cash-keys may be placed in operative connection with any desired registering attachments.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
29, for multiple fare registers.
- 7** This subclass is indented under the class definition. Subject matter comprising cash-registers.
- 8** This subclass is indented under subclass 7. Cash-registers where the keys are employed merely for setting certain parts into operative position, which parts by a subsequent movement of another part of the machine are so actuated as to cause the operation of the machine.
- 9** This subclass is indented under subclass 8. Cash-registers operated by the rotation of a crank or the movement of a lever.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
21, for lever operated, dial cash-registers
- 10** This subclass is indented under subclass 8. Cash-registers operated by the movement of the drawer.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
22, for drawer operating mechanism, per se.
- 11** This subclass is indented under subclass 8. Cash-registers wherein the movement of the key releases a spring or other motor which actuates the machine.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
62, for motor operated calculators.
- 12** This subclass is indented under subclass 7. Cash-registers in which the pressing of the key causes the operation of the various parts of the cash-register, as the indicators, registers, drawer-opening devices, etc.
- 13** This subclass is indented under subclass 12. Cash-registers wherein a separate and independent register is connected to each key.
- 14** This subclass is indented under subclass 12. Cash-registers wherein several keys act upon the same set of register wheels, the wheels being actuated a different distance according to the value of the key operated.
- 15** This subclass is indented under subclass 14. Cash-registers having differential mechanism where a key-lever when actuated is connected with a coupling or "universal" bar, so that when several keys are thus coupled further pressure upon any one of such keys will cause the operation of the machine.
- 16** This subclass is indented under subclass 14. Cash-registers having differential mechanism wherein the key-levers move a certain distance, depending upon the value of the key, before causing any movement of the parts to be actuated.
- 17** This subclass is indented under subclass 7. Cash-registers wherein checks or disks or the like are employed for the purpose of registering the sales.
- 18** This subclass is indented under subclass 17. Cash-registers employing a number of balls to register the sales, the balls sometimes being

- superposed in a transparent tube, the tube or the casing bearing graduation, so that the number corresponding to a column of any height may be ascertained from inspection, or the balls may be employed in various other ways.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 68, for ball calculators.
 123, for ball indicators.
- 19** This subclass is indented under subclass 7. Cash-registers without keys but having a pointer movable over a dial, the pointer being moved by hand and in or by its movement causing the operation of the various parts of the machine. In this subclass the pointer traveling over the face of the dial serves as the indicator.
- 20** This subclass is indented under subclass 19. Cash-registers having a separate indicator.
- 21** This subclass is indented under subclass 19. Cash-registers wherein a pointer or the like connected to a lever or its equivalent is moved over a graduated scale, the extent of movement determining the operation of the machine by the lever.
- 22** This subclass is indented under subclass 7. Mechanism whereby the drawer of a cash-register is opened or by which it is released so that it may be thrown open by means of a spring normally pressing against it; also, any mechanism whereby the drawer is operated in any way.
- 23** This subclass is indented under subclass 7. Mechanism for operating or for causing to be operated the indicators of a cash-register.
- 24** This subclass is indented under subclass 23. Subject matter comprising shutters or screens and operating devices therefore, whereby the figures on the indicators are obscured during part of the operation of the machine.
- SEE OR SEARCH CLASS:
 222, Dispensing, subclass 24 for registers with shutters claimed in combination with significant dispensing features.
- 25** This subclass is indented under subclass 23. Devices for causing the dropping of the tablets of a cash-register after they have been displayed.
- 26** This subclass is indented under subclass 7. Devices for preventing the simultaneous operation of two or more keys or for preventing the operation of more than a pre-determined number of keys.
- 27** This subclass is indented under subclass 7. Devices for locking the keys of a cash-register or other calculating machine against movement--as, for example, when the proprietor leaves the machine for a time and does not wish it operated during his absence.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 130, for register locking means in general.
- SEE OR SEARCH CLASS:
 400, Typewriting Machines, subclasses
 663+ for typewriter key locks.
- 28** This subclass is indented under subclass 7. Subject matter comprising registers that count or indicate the number of times the lid or cover of a cash-register has been opened.
- 29** This subclass is indented under subclass 33. Fare-registers including two or more separate registers for indicating different classes of fare, whether such registers are entirely independent of each other or whether they have either a common trip-register or a common totalizer.
- 30** This subclass is indented under subclass 33. Devices attached to a cab or other vehicle, adapted to be actuated either by a time-train or according to the distance traveled, at the option of the passenger, the connection being made by the driver, said device indicating to the passenger the time or distance and the amount of fare he is to pay for such time or distance.
- 31** This subclass is indented under subclass 33. Structures containing a roll of tickets, one of which, either punched or not, is withdrawn and given to each passenger and at the same time is counted upon a register.

- 32** This subclass is indented under subclass 33. Fare-boxes for street-cars etc., containing a register operated by the fare or the ticket or during the operation of the box to cause the fare to be dropped from one part to another.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
100, for coin registering boxes.
- 33** This subclass is indented under the class definition. Subject matter comprising machines employed in street-cars, operated by the conductor when taking fares and serving to indicate and register the number of fares taken. These machines include an operating-lever or its equivalent actuated by cords or rods accessible from any point of the car, registers, trip or total, or both, alarm devices, and various auxiliary devices, mainly for the purpose of preventing the conductor "beating" the machine.
- 34** This subclass is indented under subclass 33. Fare-registers whose trip-register is a pointer moving around a graduated dial and whose totalizer is composed of a series of cylinders placed side by side.
- 35** This subclass is indented under subclass 33. Fare-registers whose registering devices are belts or short flat links forming endless chains, upon which the numbers are placed.
- 36** This subclass is indented under subclass 33. Fare-registers having a plurality of registers located on axes parallel with each other.
- 37** This subclass is indented under subclass 36. Fare-registers having two sets of registering devices, as for trip and total, each set composed of a number of cylinders placed side by side.
- 38** This subclass is indented under subclass 36. Fare-registers whose registering devices, whether in one set only or in two sets--trip and total--are composed of a number of pointers, each moving around a graduated dial, the pointers of each set in the higher orders being actuated one graduation when the pointer or the lower order has made a complete rotation.
- 39** This subclass is indented under subclass 36. Fare-registers including one or more sets of registering devices, each set composed of disks numbered upon their faces, the numbers showing successively through an aperture in the casing as the disks are rotated, the disks of lower orders transferring to those of higher orders as they make complete rotations.
- 40** This subclass is indented under subclass 33. Fare-registers having one or more registers arranged on a single axis.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
34, for similarly arranged dial and cylinder fare registers.
- 41** This subclass is indented under subclass 40. Fare-registers whose registering devices comprise a plurality of disks numbered on their faces and placed concentrically upon a single shaft or axis.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
78, and 116, for other single axis, concentric disk devices.
- 42** This subclass is indented under subclass 40. Fare-registers whose registering devices are composed of a series of drums placed side by side upon a single shaft. In some cases these drums are arranged in two sets, a trip and total, the sets being separated from each other.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
34, and 37, for other cylinder type fare registers.
- 43** This subclass is indented under subclass 40. Fare-registers wherein the registering attachment comprises one or more hands moving over a dial and arranged around the same axis in a manner similar to the hour and minute hands of a clock, but ordinarily actuated step by step.
- 44** This subclass is indented under subclass 33. Devices other than the internal mechanism of a fare-register, for operating the same.

- 45** This subclass is indented under subclass 44. Operating devices for fare-registers composed partly of electrical circuits, cut-offs, etc.
- 46** This subclass is indented under subclass 44. Subject matter comprising registering ticket-punches and the like.
- 47** This subclass is indented under subclass 33. Devices by which the trip-register of a fare-register is set back to zero at the beginning of a trip.
- (1) Note. This subclass, while similar to subclass 144, in one respect (restoring the register-wheels to zero) differs from it in that while such restoration is going on various other operations are or may be performed-such as locking the machine against movement, setting the trip or direction indicator, moving a zero-register, etc.
- 48** This subclass is indented under subclass 47. Subject matter comprising devices in a fare-register for indicating the direction the car is moving and mechanism for actuating the same.
- 49** This subclass is indented under subclass 33. Subject matter comprising additions to the trip-register of a fare-register by which its capacity is increased.
- 50** This subclass is indented under subclass 51. Voting-machines having a device for recording upon a strip of paper or its equivalent the number of votes cast. The machine may or may not also have a registering attachment.
- 51** This subclass is indented under the class definition. Machines employed for mechanically casting and counting votes. These machines usually comprise keys or equivalents, one for each candidate, and in most cases a key whereby a single movement a vote can be given for the entire set of candidates for either part, interlocking mechanism for preventing votes being given for more than the proper number of candidates, and various auxiliary devices.
- 52** This subclass is indented under subclass 51. Voting-machines by means of which legislators or members of assemblies can, by operating keys or levers, indicate a "yes" and "no" vote, these devices frequently having registers connected therewith for counting up the totals of such votes. In many cases these devices are connected with the desks of the legislators.
- 53** This subclass is indented under subclass 51. Voting machines wherein a check or ball is employed to operate the registering device.
- 54** This subclass is indented under subclass 51. Voting-machines wherein the movement of the key sets in position for further operation certain parts, the operation of such parts and through them the registers, etc., being effected by means of a device afterwards operated, such as the door of the booth which is operated by the voter when he departs, etc.
- 55** This subclass is indented under subclass 51. Voting-machines wherein the registering is effected by the direct action of the keys or levers.
- 56** This subclass is indented under subclass 51. Voting-machines whereby the votes are marked upon "Australian ballots" are enabled to be rapidly counted.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
386, for systems wherein a ballot is sensed and the results are tabulated.
- SEE OR SEARCH CLASS:
705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 12 for a system to calculate the totals of vote returns.
- 57** This subclass is indented under the class definition. Ballot-boxes having attachments for registering the number of ballots placed therein.
- 58** This subclass is indented under subclass 61. Calculators which contain adding or other calculating mechanism and devices for recording the numbers set up or the results, or both.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

50, 432, 433, and 434, see subclass 60 below.

59 This subclass is indented under subclass 58. Recording calculating-machines where the actuation of the key directly operates the registering and recording devices.

60 This subclass is indented under subclass 58. Recording calculating-machines where the depression of a key sets certain devices in position and a succeeding movement of another part, as a handle or lever, operates the machine.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

50, for recording voting machines.
 59, for recording calculating machines wherein the depression of a key directly operates the registering and recording devices.
 432, 433 and 434, for recording calculating machines controlled by the sensing of data representing indicia on a record.

SEE OR SEARCH CLASS:

101, Printing, subclasses 2, 19+ and 93+ for mechanism for concurrently printing a plurality of characters, when such printing mechanism is disclosed without calculating structure or is not claimed in combination with significant calculating structure of the type provided for in Class 235.
 234, Selective Cutting (e.g., Punching), appropriate subclasses, for manually controlled mechanism which records by selectively punching a sheet or web, wherein no calculating machine is included.
 396, Photography, subclasses 549+ for devices wherein recording is effected by photographing selected characters on a movable member, when such devices are disclosed without calculating structure or are not claimed in combination with significant calculating structure of the type provided for in Class 235.
 400, Typewriting Machines, for digit-by-digit printing mechanism for concur-

rently printing a plurality of characters, when such printing mechanism is disclosed without calculating structure or is not claimed in combination with significant calculating structure of the type provided for in Class 235.

60.11 This subclass is indented under subclass 60. Subject matter wherein the recording is effected by other than printing or punching means. This subclass receives calculators provided with photographic recording means.

SEE OR SEARCH CLASS:

396, Photography, subclasses 549+ for devices wherein recording is effected by photographing selected characters on a movable member, when such devices are disclosed without calculating structure or are not claimed in combination with significant calculating structure of the type provided for in Class 235.

60.12 This subclass is indented under subclass 60. Subject matter comprising a typewriter combined with a calculator, wherein the two units are each of substantially standard construction and are capable of separation and independent use.

(1) Note. These machines are generally characterized by the presence of separate and complete keyboards for each unit and the provision of locking and interlocking devices controlling the operation of the two units and/or interconnections between the typewriter keys and calculator keys, or differential actuators, to eliminate duplication in indexing amounts. This subclass receives a combined machine of the type defined even though it may have a platen common to the typewriting mechanism and to separate printing mechanism in the calculator.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

59, for typewriter calculating machines, wherein digital entries are effected in a totalizer by or with the operation of numeral keys of the typewriter.

- 60.38+, for typewriter calculating machines, wherein the typewriter keys control typing in the usual fashion, but digital values are set up in indexing mechanism under control of the typewriter numeral keys and are entered concurrently in a plurality of orders of the totalizing mechanism after the completion of a multi-digit typing operation.
- 60.13** This subclass is indented under subclass 60. Subject matter provided with a plurality of distinct recording means for recording on different portions of the same record receiving medium or for recording on different record receiving mediums.
- 60.15** This subclass is indented under subclass 60. Subject matter comprising devices for recording other than numerical data.
- 60.16** This subclass is indented under subclass 60.15. Subject matter in which alphabetical data is recorded. The alphabetical recording elements may be mounted on a member which also carries numerical recording elements or on separate members, as in a typewriter calculator. This subclass only receives typewriter calculators where some feature peculiar to alphabetical printing is claimed in combination with subject matter under subclass 60.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
60.38+, see subclass 60.12 above.
- 60.17** This subclass is indented under subclass 60.15. Subject matter in which the recorded data comprises signs or characters for indicating the zeroizing or clearing of a totalizer or totalizers. This subclass receives devices for indicating totalizer clearance by printing in a distinctive color.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
144, for zero setting or totalizer clearing devices, per se, or when combined with means for signalling the cleared condition of a totalizer.
- 60.18** This subclass is indented under subclass 60.15. Subject matter in which the recorded data comprises distinctive characters or symbols for the purpose of indicating the nature of some phase of a calculating operation. These characters or symbols may be indicative of the totalizer or totalizers selected for entering or total taking operations, the nature of an entering operation, as addition or subtraction or the positive or negative condition of the amount standing in a totalizer, etc.
- 60.19** This subclass is indented under subclass 60. Subject matter wherein recording is effected in a distinctive color, as by shifting a multicolor ribbon.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
60.17, for mechanism for recording distinctive characters for indicating the zeroizing or clearing of a totalizer.
60.18, for mechanism for recording distinctive characters for the purpose of indicating the nature of some phase of a calculating operation, other than clearing a totalizer.
- 60.2** This subclass is indented under subclass 60. Subject matter comprising mechanism for controlling the recording means to record the true total from totalizer or result receiving elements which contain a negative or overdraft amount, as a result of the subtraction of an amount or amounts which exceed the total of positive or additive entries therein, or such means as is necessarily incidental to a true negative total recording operation.
- 60.22** This subclass is indented under subclass 60.2. Subject matter in which electrical means are employed for reading the total from the totalizer or result receiving elements or in controlling the elements which record the true negative total.
- 60.23** This subclass is indented under subclass 60. Subject matter comprising devices for selectively splitting a continuous series of printing devices into distinct and separately operating sections, generally by rendering the zero print controlling devices ineffective at the point at which splitting is effected.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

60.28, for devices for controlling zero recording in the operation of gang recording mechanism.

60.24 This subclass is indented under subclass 60. Subject matter including devices for causing the printing of a total by a greater number of printing elements than are employed in printing the items which are entered to form the total. Such devices are employed where overflow orders of the totalizer extend beyond the printing elements which are allocated to and are operative in item printing operations, and it is necessary to call additional printing elements into operation during total taking operations to print a total under control of these overflow orders.

60.25 This subclass is indented under subclass 60. Subject matter comprising means to disable or render ineffective the recording mechanism, whereby an amount may be entered into the calculator without being recorded. These controls are of the type usually known as "non-print" devices.

60.26 This subclass is indented under subclass 60. Subject matter comprising means to disable or render ineffective the mechanism for entering amounts into the register or totalizing means, whereby an amount may be recorded without being entered into the calculator.

60.27 This subclass is indented under subclass 60. Subject matter wherein a plurality of recording elements are selectively positioned in an operation and a common operator is subsequently effective to cause recording from each of said positioned elements.

60.28 This subclass is indented under subclass 60.27. Subject matter comprising devices for controlling the recording of zeros in orders in which no significant digit appears.

(1) Note. These devices are usually controlled by a higher order recording element which is positioned to record a significant digit, to cause zero recording by adjacent lower elements in which no such digit appears and to suppress zero

recording from recording elements in orders above the order in which the highest significant digit appears.

(2) Note. This subclass receives manually settable devices in machines of the type provided for in subclass 60.27 for enabling or suppressing zero recording, whether in combination with the automatic devices mentioned in (1) Note or not.

60.29 This subclass is indented under subclass 60.27. Subject matter in which recording is effected by punching.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

434, for mechanism for recording by punching when claimed in combination with record controlled calculating structure.

SEE OR SEARCH CLASS:

234, Selective Cutting (e.g., Punching), appropriate subclasses, and particularly subclass 91 for selective recording mechanism which comprises successively selected and simultaneously actuated cutting tools.

60.3 This subclass is indented under subclass 60.27. Subject matter comprising total taking means for positioning recording elements in accordance with the settings of totalizer or result receiving elements, and such mechanism as is necessarily incidental thereto.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2+, for means for taking totals from a totalizer in a cash register.

50, for means for taking totals from the counters in a voting machine.

60.39+, for total taking means of the digit-by-digit recording type.

432, 433 and 434, for means to record the results of totals taken in record-controlled calculators.

60.31 This subclass is indented under subclass 60.3. Subject matter wherein the recording elements are positioned by restoring the result receiving or totalizer elements to their zero position.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

144, for zero-setting or totalizer clearing devices, per se.

60.32 This subclass is indented under subclass 60.31. Subject matter comprising devices for avoiding the blank cycle which is necessary in many types of calculating machines in order to condition the totalizer or other calculating structure for a total reading operation. These blank cycles are usually necessary in order to restore tripped tens carry devices to their normal positions.

60.33 This subclass is indented under subclass 60.3. Subject matter wherein the recording elements are positioned by sensing the totalizer or result elements or under control of devices which sense said totalizer or result elements. This subclass receives total sensing devices wherein the feelers are permanently engaged with the result elements.

60.34 This subclass is indented under subclass 60.33. Subject matter comprising mechanism for restoring the totalizer or result elements to their zero positions after the total sensing operation.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

144, for zero-setting or totalizer clearing devices, per se.

60.35 This subclass is indented under subclass 60.3. Subject matter wherein the selection of recording elements, or operative portions thereof, which effect recording, is controlled by impulses which are differently timed; that is, the relative timing of the controlling impulses determines the digits which are to be recorded. The differentially timed impulses are usually electrical in nature, as in electrical record controlled calculating machines. However, this subclass receives mechanical machines wherein recording elements are selected by mechanically operated means which are operated at differential times.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

432, 433 and 434, for printing and punching devices, respectively, which are

operated by differentially timed impulses, when claimed in combination with record controlled calculating structure.

60.37 This subclass is indented under subclass 60.3. Subject matter in which a total or result is recorded by taking a direct impression from a totalizer or result element, or from a recording element directly coupled thereto.

60.38 This subclass is indented under subclass 60. Subject matter comprising recording means of the type wherein one digit is recorded at a time and escapement of the device which carries the record medium permits successive recording. This subclass receives typewriter computing means of the type wherein the typewriter keys control typing in the usual fashion. In addition, the numeral keys, by means of carriage controlled devices, cause the values of digital characters typed to be successively set up in an indexing mechanism, which mechanism controls entry of said set up values concurrently into a plurality of totalizer orders upon the completion of a multidigit typing operation. Where denominational selection of the indexing or digit receiving set up means is claimed, classification is in this subclass or indented subclasses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

60.41+, for carriage control features, other than denominational selection, particularly subclasses 60.47+.

SEE OR SEARCH CLASS:

234, Selective Cutting (e.g., Punching), appropriate subclasses, for a selective step-by-step punching device, and particularly subclasses 120+ for input means for such a device which may involve calculating machine structure.

60.39 This subclass is indented under subclass 60.38. Subject matter comprising total taking means for selecting digit recording elements in accordance with the settings of a totalizer or result receiving elements, and such means as is necessarily incidental thereto.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
60.3, for gang recording means combined with total taking structure.
- 60.4** This subclass is indented under subclass 60.39. Subject matter in which the total taking means is controlled, at least in part, by electrical means.
- 60.41** This subclass is indented under subclass 60. Subject matter comprising a carriage which carries the paper or other medium upon which recording is effected and is so movable as to cause recording upon different portions of the record receiving medium.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
60.38+, for carriage controlled selection of the successive denominational orders into which digital entries are effected.
- 60.42** This subclass is indented under subclass 60.41. Subject matter comprising devices for controlling feeding or positioning of the carriage.
- 60.44** This subclass is indented under subclass 60.42. Subject matter comprising mechanism for moving the carriage back and forth, or shutting it, between two positions.
- 60.45** This subclass is indented under subclass 60.42. Subject matter comprising power means, other than the usual spring means, for moving the carriage from one position to another.
- 60.46** This subclass is indented under subclass 60.42. Subject matter comprising means for selectively positioning the carriage at various columnar positions.
- 60.47** This subclass is indented under subclass 60.41. Subject matter comprising means controlled by the position of the carriage for controlling various functions of the machine.
- 60.48** This subclass is indented under subclass 60.47. Subject matter for selecting a totalizer or totalizers for either item entering or total taking operation. The totalizer selection means may be combined with means for controlling the nature of an entering operation and may effect totalizer selection by enabling or disabling totalizer actuating or item receiving mechanism.
- 60.49** This subclass is indented under subclass 60.47. Subject matter for controlling devices for locking various machine elements or for controlling interlocks between various elements of the machine.
- 60.5** This subclass is indented under subclass 60.47. Subject matter comprising structures or elements, which are carried by the carriage for operating some machine control mechanism.
- 60.51** This subclass is indented under subclass 60. Subject matter comprising means for controlling operation of the platen or paper feeding mechanism.
- 60.52** This subclass is indented under subclass 60. Subject matter comprising means controlled by the platen or paper feeding means for controlling various functions of the machine.
- 61** This subclass is indented under the class definition. Subject matter comprising calculating-machines. In this group are classified machines for mechanically performing the various mathematical operations, usually those of addition or subtraction, frequently that of multiplication, and occasionally of division. These machines generally comprise registers and keys or equivalents for operating them, together with necessary auxiliary devices.
- SEE OR SEARCH CLASS:
33, Geometrical Instruments, for means for calculating unknown functions of geometrical figures, said means having members designed to form representations of said figures.
73, Measuring and Testing, subclasses 861.43+ for integrating means combined with flow meter structures.
177, Weighing Scales, subclasses 25+ for a weigher with means making a calculation using a weight evaluation by the weigher as a factor.
315, Electric Lamp and Discharge Devices: Systems, subclasses 8.5+ for cathode-ray tube systems responsive to electrical pulses for counting or storing such pulses, or for translating

- such pulses from one code to another code, and subclass 84.5 for electrical pulse counting or storing circuits employing gaseous space discharge devices.
- 333, Wave Transmission Lines and Networks, subclass 19 for differentiating or integrating networks of the passive type.
- 62** This subclass is indented under subclass 61. Calculating-machines wherein the pressing of a key releases a spring or other motor which actuates the devices to the extent determined by the value of the key operated.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
11, for motor operated cash registers.
- 63** This subclass is indented under subclass 61. Calculating-machines having a single set of keys and having devices movable from order to order of the registering mechanism and connecting the keys successively therewith.
- 64** This subclass is indented under subclass 61. Subject matter comprising devices attached to a pencil or similar instrument which are employed to keep account of the sum of columns to be added or the number of tens to be "carried", usually operated by the pressure of the point upon the paper or desk.
- (1) Note. Adding devices that are merely adapted to be clamped to a pencil, but do not form part thereof and are not operated by the movement of the pencil, are not classified herein, but are classified according to the structure of the adding device itself.
- 64.3** This subclass is indented under subclass 61. Subject matter comprising devices either in conjunction with a logarithmic calculator or apart from such calculator, which devices have a scale or scales to determine the location of a decimal point in a calculation.
- 64.7** This subclass is indented under subclass 61. Calculators having movable members variably positionable with respect to one another, at least one of said members having an index or scale positionable opposite a point on a scale
- on the other member and there being at least one scale having values peculiar to the art of photography.
- 65** This subclass is indented under subclass 61. Subject matter comprising adding-machines having two parts, a bar and a disk, one part being for the lower orders and the other for the higher.
- 66** This subclass is indented under subclass 61. Subject matter comprising adding-machines having two parts, a cylinder and a disk, or a plurality of either.
- 67** This subclass is indented under subclass 61. Subject matter comprising adding-machines wherein the numbers are arranged spirally, either around the surface of a cylinder or upon the face of a disk, there ordinarily being a pointer or its equivalent that travels in cooperation with the cylinder or disk in order to indicate the proper figure or number.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
107, for spiral registers.
- 68** This subclass is indented under subclass 61. Calculators wherein the registering devices are composed of balls.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
18, and 123, for other ball devices.
- 69** This subclass is indented under subclass 61. Calculating devices wherein a bar or bars bearing numerals are employed instead of disks or cylinders.
- 70** This subclass is indented under subclass 69. Subject matter comprising rules consisting of a stationary base, and one or more slides movable therein, both the base and the slides being graduated, usually logarithmically, according to the different elements of some mathematical formula, so that by placing the slide in proper relation to the base, problems embodying such formula may be solved without calculation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
79.5, and 84, for other types of slide rules.

- 71** This subclass is indented under subclass 61. Calculating-machines wherein movable belts bearing numerals are employed instead of cylinders or disks. Machines wherein belts are employed as devices whereby to operate registering or calculating cylinders, etc., are not classified herein, but are located according to the character of the registering mechanism.
- 72** This subclass is indented under subclass 61. Calculating-machines wherein the registering devices are placed upon axes parallel with each other.
- 73** This subclass is indented under subclass 72. Calculating-machines whose registering attachments comprise cylinders placed either singly or in sets on axes parallel with each other.
- 74** This subclass is indented under subclass 72. Calculating-machines whose registering attachments comprise disks placed upon axes parallel with each other, the disks being actuated by some instrument held in the hand, such as a stylus, pencil, etc.
- 75** This subclass is indented under subclass 74. Calculating-machines wherein the disks are each operated by means of keys.
- 76** This subclass is indented under subclass 72. Calculating-machines whose registering devices are on axes parallel with each other, these devices being connected by gears instead of by intermittent transfer mechanism.
- 77** This subclass is indented under subclass 61. Calculators whose registering devices are placed upon the same axis.
- 78** This subclass is indented under subclass 77. Calculating-machines whose registering devices comprise a plurality of disks numbered on their faces and mounted in a base, said disks being placed concentrically on a single shaft or axis.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
41, and 116, for other concentric disk devices.
- 79** This subclass is indented under subclass 77. Calculating machines whose registering devices are composed of cylindrical members mounted for rotation on a common axis.
- 79.5** This subclass is indented under subclass 79. Calculating devices wherein two or more relatively movable cylindrical members are so graduated, usually logarithmically according to the elements of some mathematical formula, that by placing one in proper relation to another problems involving such formula may be solved.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
70, for bar slide rules.
84, for disk slide rules.
- 80** This subclass is indented under subclass 79. Calculators whose registering devices comprise cylinders placed upon a single axis, these cylinders being operated directly by means of the fingers of the operator or by a stylus, pencil, or other instrument held in the hand.
- 81** This subclass is indented under subclass 80. Calculators whose registering devices comprise cylinders placed side by side upon a single axis, these cylinders being operated by levers or equivalents having handles or the like movable to different extents over a graduated plate.
- 82** This subclass is indented under subclass 79. Calculating-machines having registering devices composed of a series of cylinders placed side by side upon a common shaft and being directly operated by the depression of keys, with which the machine is provided.
- 83** This subclass is indented under subclass 77. Calculators, whose registering devices comprise a rotatable disk mounted on a base, or one or more hands or pointers movable over the face of a dial properly graduated.
- 84** This subclass is indented under subclass 83. Subject matter comprising slide rules, as defined in subclass 70 wherein the base and the slides instead of being straight are circular.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
70, and 79.5, for other types of slide rules.
- 85** This subclass is indented under subclass 61. Calculators comprising a table showing results calculated from certain data so arranged that by properly manipulating the same any desired result is obtained.
- SEE OR SEARCH CLASS:
177, Weighing Scales, subclasses 34+ for a tabular type computer combined with a weigher.
- 86** This subclass is indented under subclass 85. Tabular calculators having the tables placed upon belts which are movable back and forth, as desired.
- 87** This subclass is indented under subclass 85. Tabular calculators having tables formed or placed upon cylinders.
- 88** This subclass is indented under subclass 85. Tabular calculators having tables placed upon disks which rotate about their centers.
- 89** This subclass is indented under subclass 85. Tabular calculators having tables placed upon sheets, the sheets being attached to a frame either permanently or temporarily and a guiding-strip or the like being provided to used in connection with the sheets.
- 90** This subclass is indented under the class definition. Subject matter comprising boards such as cribbage boards and the like, for tallying purposes, the tallying being accomplished by means of pegs or the like successively moved to different holes as the tally increases.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 325+ for similar peg type indicators.
- 91** This subclass is indented under the class definition. Subject matter comprising devices for operating registers, the specific construction of the registers not being of the invention.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
56, and 419+, for record controlled operating devices for registering mechanisms.
- 93** This subclass is indented under the class definition. Subject matter comprising registers connected with and operated by a turnstile.
- 94** This subclass is indented under the class definition. Subject matter comprising registers operated by means of a faucet or other part through or in which the fluid passes, such as registering-faucets, registers connected with saucers holding beer-glasses, registering bottles, etc.
- 95** This subclass is indented under the class definition. Subject matter comprising registers connected or attached to the wheel or axle of a vehicle, such as a carriage or bicycle, for the purpose of counting the number of revolutions made by the wheel and, with the knowledge of the size of the wheel, of measuring the distance traveled, the counting-wheels being marked to indicate the distances instead of the number of revolutions.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 490 for an odometer combined with a speedometer.
- 96** This subclass is indented under subclass 95. Subject matter comprising details or isolated parts of odometers or parts connected therewith, such as tappets, brackets, etc.
- 97** This subclass is indented under subclass 95. Odometers having two sets of registering devices, one set moving continuously to indicate the entire distance traveled and the other set capable of being reset to zero at any desired time and adapted to indicate the distance traveled during a single trip or in a day or any desired interval of time.
- 98** This subclass is indented under the class definition. Subject matter comprising registers operated by a package, barrel, etc., passing through the machines.

- SEE OR SEARCH CLASS:
 198, Conveyors: Power Driven, subclass 503 for conveyor organizations including broadly claimed counters.
 221, Article Dispensing, subclass 7 for plural article dispensing organizations not otherwise provided for, including dispenser operated register structures.
- 99** This subclass is indented under the class definition. Subject matter comprising registers operated through the medium of a depressible seat, platform, or the like on which the person sits or steps or the article is placed.
- 100** This subclass is indented under the class definition. Subject matter comprising registers operated by a coin as it passes into a box or other receptacle.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 32, for similar fare or ticket registers.
- 101** This subclass is indented under the class definition. Subject matter comprising registers operated by the hand-stamp or by postage stamp dispensing or printing mechanisms.
- 102** This subclass is indented under the class definition. Subject matter comprising devices for counting the number of words etc., written by a typewriter.
- SEE OR SEARCH CLASS:
 234, Selective Cutting (e.g., Punching), subclasses 4+ for a keyboard operated selective punching machine provided with an inter-word-space counter.
- 103** This subclass is indented under the class definition. Subject matter comprising instruments for counting the number of rotations made by a shaft or other piece of machinery.
- 103.5** This subclass is indented under subclass 103. Subject matter comprising instruments for comparing the number of rotations made by two or more shafts or other pieces of machinery.
- 104** This subclass is indented under subclass 103. Subject matter comprising instruments or machines for counting or indicating the number of rotations in a given time made by a shaft or other piece of machinery--as, for example, the number of rotations per second or minute or even the number of miles per hour made by a moving vehicle.
- SEE OR SEARCH CLASS:
 73, Measuring and Testing, subclasses 488+ for speed sensing mechanism for producing similar indications.
- 105** This subclass is indented under the class definition. Subject matter comprising instruments attached to the foot or body for counting the number of steps made; also, devices for analogous purposes.
- 106** This subclass is indented under the class definition. Subject matter comprising machines having several registering devices placed on axes at angles to each other.
- 107** This subclass is indented under the class definition. Subject matter comprising registers wherein the numbers are arranged spirally, either around the surface of a cylinder or upon the face of a disk, a pointer being sometimes employed which travels along the cylinder or disk in order to indicate the proper numeral.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 67, for spiral calculators.
- 108** This subclass is indented under the class definition. Subject matter comprising registers, counting devices on axes parallel with each other.
- 109** This subclass is indented under subclass 108. Registers whose counting devices are connected by gearing instead of intermittently-operating transfer mechanism.
- 110** This subclass is indented under subclass 108. Registers whose counting devices comprise several cylinders or drums.

- 111** This subclass is indented under subclass 108. Registers whose counting devices include both graduated movable disks and pointers passing over graduated dials.
- 112** This subclass is indented under subclass 108. Registers whose counting devices include several graduated dials over whose surfaces pass pointers or hands.
- 113** This subclass is indented under subclass 108. Registers whose counting devices include a plurality of rotatable disks having numbers on their faces.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
111, for dial and disk registers.
- 114** This subclass is indented under subclass 113. Registers the disks being separately operated by hand. These registers are generally used in keeping count of the points made in games.
- 115** This subclass is indented under the class definition. Subject matter comprising registers whose counting devices are placed upon a single axis.
- 116** This subclass is indented under subclass 115. Registers whose counting devices comprise a plurality of disks numbered upon their faces and mounted on a base, said disks being placed concentrically upon the shaft or axis.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
41, and 78, for other concentric disk devices.
- 117** This subclass is indented under subclass 115. Registers whose counting devices comprise a plurality of cylinders placed side by side upon the shaft or axis.
- 118** This subclass is indented under subclass 117. Registers whose counting devices comprise a single cylinder numbered on its periphery.
- 119** This subclass is indented under subclass 115. Registers whose counting devices comprise two or more cylinders, the cylinders having connected or formed therewith gears having different numbers of teeth, but actuated by the same gear, thus causing a slow movement of one cylinder with respect to the other.
- 120** This subclass is indented under subclass 115. Registers whose counting devices comprise several pointers or hands moving over a dial and turning around the same axis at different rates of speed, the relative movements being continuous, as when connected by gears or pinions in the same way as the hands of a watch, or intermittent, as when caused by transfer devices operating only when one hand has completed a rotation.
- 121** This subclass is indented under subclass 115. Registers whose counting devices comprise a graduated dial and a single hand or pointer moving thereover.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
103, for similar registers in rotation counters.
- 122** This subclass is indented under subclass 115. Registers whose counting mechanism comprises a rotating disk having numbers on its face.
- 123** This subclass is indented under the class definition. Subject matter comprising counting devices where balls, buttons or push buttons movable upon a support are employed to count or keep tally of a game--such, for instance, as billiards.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
18, 68 and 123, for other ball devices.
90, for peg tally boards.
- 124** This subclass is indented under the class definition. Subject matter comprising registers embodying a pointer moving along a graduated bar.
- 125** This subclass is indented under the class definition. Subject matter comprising registering-machines wherein the registering elements are movable belts bearing numerals.

- 127** This subclass is indented under the class definition. Subject matter comprising devices for keeping count of the points in a game or for equivalent purpose, comprising indicators pivoted to a base and adapted to be turned on their pivots--as, for example, from a horizontal to a vertical position--to indicate the desired data.

SEE OR SEARCH CLASS:

- 116, Signals and Indicators, subclasses 309+ for analogous pivoted indicators.

- 128** This subclass is indented under the class definition. Subject matter comprising mechanism connected to registering devices of any character for sounding an alarm, as by ringing a bell or in any other manner.

SEE OR SEARCH CLASS:

- 116, Signals and Indicators, subclasses 67+ for other alarms.
340, Communications: Electrical, subclasses 500+ for electrical automatic condition responsive indicating systems.

- 130** This subclass is indented under the class definition. Subject matter comprising devices for positively locking a part against movement, either temporarily until the machine shall have operated to a certain extent or for such a time as the operator may desire.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 27, for devices for locking calculating machine keys against movement.

SEE OR SEARCH CLASS:

- 400, Typewriting Machines, subclasses 663+ for typewriter key locks, and subclass 676 for machine locks.

- 131** This subclass is indented under the class definition. Subject matter comprising devices for preventing the accidental movement of a part or for preventing a register-wheel or other moving part from being carried by momentum farther than it should go.

SEE OR SEARCH CLASS:

- 74, Machine Element or Mechanism, subclasses 148+, particularly subclasses 152 for such devices, per se.

- 132** This subclass is indented under the class definition. Subject matter comprising devices under control of a register for effecting either the stoppage of the register, or the starting, stopping, or other operation of apparatus controlled by the register (as the opening or closing of a switch) upon a particular or predetermined reading of the register being obtained.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 47+, and 144, for means to stop the register wheels at zero during resetting.

SEE OR SEARCH CLASS:

- 53, Package Making, subclasses 52+ for packaging machines having as a part thereof an automatic or triggered control.
192, Clutches and Power-Stop Control, subclasses 138+, for similarly controlled clutches.
222, Dispensing, subclasses 14+, 27, and 39 for similar devices in dispensing mechanism.
234, Selective Cutting (e.g., Punching), subclass 21 for a selective cutting device with control means operable in response to a predetermined register reading.

- 133** This subclass is indented under the class definition. Subject matter comprising devices whereby a register-wheel of higher order is advanced one step each time a wheel of the next lower order has made a complete rotation.

- 134** This subclass is indented under subclass 133. Transfer devices wherein the wheel of lower order has connected therewith or placed thereon a cam or eccentrically-disposed pin acting upon a lever connected with which is a pawl or equivalent that actuates the wheel of higher order.

- 135** This subclass is indented under subclass 133. Transfer devices wherein the register-wheels have attached thereto ratchet-wheels, each

- wheel having one notch deeper than the rest, these notches being of successively-increasing depth in the several wheels, whereby the actuating pawl or pawls are permitted at each complete rotation of a wheel to move one step the wheels of the next higher orders.
- 136** This subclass is indented under subclass 133. Transfer mechanism comprising a pinion or equivalent meshing with gears attached to or connected with two register-wheels the gears having teeth differing in number, so that one moves at a rate different from the other.
- 137** This subclass is indented under subclass 133. Transfer mechanism wherein the complete rotation of a register-wheel sets a device into such a position that by a subsequent movement and by an independent actuating device it is caused to actuate one step the wheel of next higher order.
- 138** This subclass is indented under subclass 137. Transfer mechanism wherein the independent actuating device moves successively from one order to another.
- 139** This subclass is indented under subclass 133. Transfer devices comprising a pinion between each two register-wheels on a shaft parallel to that of said wheels, said pinion being actuated by the gear of one register-wheel and actuating the gear of the wheel of higher order, one of the gears or pinions of the set having a single tooth, so that the wheel of higher order is moved intermittently from one number to the next at each complete rotation of the wheel of lower order.
- 140** This subclass is indented under subclass 133. Transfer devices wherein each register-wheel has a single tooth upon its side (or periphery) which at each complete rotation engages with a ratchet-tooth on the wheel of next higher order, moving it one step.
- 141** This subclass is indented under subclass 140. Transfer mechanism wherein the wheel of higher order is locked from accidental movement when the transfer is not being effected.
- 142** This subclass is indented under subclass 133. Transfer devices comprising a pawl pivoted to and moving with a register-wheel which, when the wheel has completed a rotation, is moved radially with respect to the wheel into engagement with a pin or tooth on the wheel of next higher order for a time sufficient to move the latter one step.
- 143** This subclass is indented under subclass 142. Transfer devices except that the pivoted pawl has a movement transverse to the plane of the register-wheel.
- 144** This subclass is indented under the class definition. Subject matter comprising devices by which the register of a calculator, cash-register, or other machine is returned to zero or "cleared out."
- SEE OR SEARCH CLASS:
222, Dispensing, subclasses 32+ for registers with zero-setting mechanism claimed in combination with significant dispensing features.
- 145** This subclass is indented under the class definition. Subject matter comprising those portions of registers, usually manually actuated, including keys, shift-keys, space bars, etc., which control and initiate the action of the calculating machine to determine what numbers shall be introduced and how; also to control subsidiary operations of the machine.
- SEE OR SEARCH CLASS:
234, Selective Cutting (e.g., Punching), subclasses 123+ for a keyboard associated with a selective cutting machine.
- 146** This subclass is indented under subclass 145. Keyboards which are supported above or otherwise adjacent to the main keyboard of the machine, often for performing some function additional to that of the main keyboard.
- 200** This subclass is indented under subclass 61. Subject matter utilizing fluid which represents information content; the system as a whole being specialized to a calculating function and having (1) fluid flow varying components which are connected by fluid storage or flow passages which, for example, act as a "feed back", a "carry" between components, distribute pulsed flow between components or act as information memory means or (2) one or more

means utilizing a fluid, combined with a calculation value indicator.

SEE OR SEARCH CLASS:

- 137, Fluid Handling, subclasses 803+ for devices of more general application in which fluid flow of one stream is effected by (1) fluid contact with another stream or by (2) use of an energy field and see the notes to Class 137, subclass 803 for the line between classes.
- 341, Coded Data Generation or Conversion, appropriate subclasses for code converters which are electrical at least in part.
- 700, Data Processing: Generic Control Systems or Specific Applications, appropriate subclasses and particularly subclasses 90 through 306 for particular data processing applications.

- 201** This subclass is indented under subclass 200. Subject matter including means indicating discrete pulses in a fluid stream, which pulses indicate digital information content.

375 SYSTEMS CONTROLLED BY DATA BEARING RECORDS:

This subclass is indented under the class definition. Subject matter including means to sense a data-bearing record in combination with a system or apparatus to utilize or be activated or controlled by the information sensed from the record.

- (1) Note. For classification herein, there must be significantly claimed record-sensing means, or record structure, in combination with the system being controlled.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 419, for record controlled mechanical or electromechanical calculators.
- 435, for record-sensing devices, per se.

SEE OR SEARCH CLASS:

- 340, Communications: Electrical, subclasses 5.23 through 5.24 for programmable authorization data by data bearing record or carrier code, sub-

class 5.26 for authorization by programmable coded record, and subclasses 5.6-5.67 for selective authorization control including nominally claimed data bearing records or record sensing.

- 382, Image Analysis, subclasses 181+ for pattern or character recognition systems.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 90 through 306 for the application of a data processing system or a calculating computer which may include nominal recitation of a data bearing record means.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 1+ for a business or financial data processing system, particularly subclasses 17+ for an electronic cash register or terminal having a card interface, and subclass 41 for a financial data processing system using an IC or "smart" card.

376 Operations analysis:

This subclass is indented under subclass 375. Subject matter wherein records sensed at various stations supply the system with an account of materials and labor used in an industrial process or the progress of some process or event.

SEE OR SEARCH CLASS:

- 377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 15 and 16 for counters used in industrial production.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 7 through 11 for this subject matter having significant data processing.

377 Time analysis:

This subclass is indented under subclass 375. Subject matter wherein various times entered on a record are sensed and a total time that has elapsed is determined.

SEE OR SEARCH CLASS:

- 346, Recorders, subclasses 80+ for recorders that provide a record of time elapsed.
- 377, Electrical Pulse Counters, Pulse Divider, or Shift Registers: Circuits and Systems, subclass 20 for counters used to determine the passage of time.

378 Price determination:

This subclass is indented under subclass 377. Subject matter including means to determine the cost based on the time that has elapsed.

SEE OR SEARCH CLASS:

- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 48 for computers to determine price based on the elapse of time.

379 Banking systems:

This subclass is indented under subclass 375. Subject matter wherein indicia from a bearer card or record and other indicia are compared with computer information regarding the bearer and credit reallocated among various accounts.

SEE OR SEARCH CLASS:

- 382, Image Analysis, subclasses 135+ for sensing images or alphanumeric characters on paper money or bank checks to either recognize or classify the document.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 35 through 45 for data processing and computer systems, per se, used in banking systems.

380 Credit or identification card systems:

This subclass is indented under subclass 375. Subject matter in which an indication is produced from the results of comparing information as to the bearer of a record in a computer, the indicia sensed from the record and other information supplied at the record-sensing station.

SEE OR SEARCH CLASS:

- 340, Communications: Electrical, subclasses 5.4 through 5.42 for systems that provide authorization by a comparison of intelligence with a balance in an individual account.
- 382, Image Analysis, subclasses 115+ for identification card system which include sensing or reading a pattern or alphanumeric characters.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 5.

381 With vending:

This subclass is indented under subclass 380. Subject matter including means to release an article or merchandise.

SEE OR SEARCH CLASS:

- 194, Check-Actuated Control Mechanisms, appropriate subclasses for apparatus responsive to a nonindicia bearing taken to deliver an article, particularly subclasses 216+ for a computerized value accumulator in a check-actuated control mechanisms.
- 221, Article Dispensing, subclass 9 for apparatus to dispense an article, per se.
- 222, Dispensing, subclass 2 for apparatus responsive to a nonindicia bearing token to provide a dispensing operation.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 231 through 244 for computers used in article-dispensing systems.

382 Permitting access:

This subclass is indented under subclass 380. Subject matter including means allowing entry of an individual into an area or the use of specific equipment.

382.5 Changeable authorization:

This subclass is indented under subclass 382. Subject matter having an arrangement for modifying the data required to permit access.

- (1) Note. Included herein are card key devices which change the card key which unlocks a door.

383 Mechanized store:

This subclass is indented under subclass 375. Subject matter wherein purchased articles bearing coded indicia are sensed and cost information in the computer associated with the particular indicia is supplied to the station where the indicia is sensed to provide visual readout and/or a machine printout including total cost.

SEE OR SEARCH CLASS:

705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 5 for a reservation data processing system; and subclass 13 for a fare data processing system.

384 Transportation:

This subclass is indented under subclass 375. Subject matter in which data records are used to reflect usage in terms of distance to produce an indication of cost.

SEE OR SEARCH CLASS:

705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 417 for a device that determines price (fare) based on the distance travelled.

385 Inventory:

This subclass is indented under subclass 375. Subject matter wherein a record associated with or representative of an article is sensed, the data so sensed being used to compile a record of items on hand.

SEE OR SEARCH CLASS:

705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 28+ for a data processing system for calculating an inventory of items on hand.

386 Voting machine:

This subclass is indented under subclass 375. Subject matter including means to read sheets bearing hand-coded indicia representative of

various categories and providing a total for each category.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

56, and 57, for means to indicate the total number of votes cast.

SEE OR SEARCH CLASS:

705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 12 for an election result calculating system including significant data processing.

400 ORDNANCE OR WEAPON SYSTEMS COMPUTERS:

This subclass is indented under the class definition. Subject matter including apparatus capable of rapidly solving those mathematical problems pertaining to the ordnance.

- (1) Note. Ordnance includes military weapons, ammunition, and weapon delivery systems.

- (2) Note. Target includes a location or target area defined relative to the point at which a projectile is launched.

- (3) Note. Projectile includes ammunition or any body projected by external force and continuing in motion by its own inertia, as a missile from a gun or mortar; or a self propelled weapon (as a rocket or torpedo).

SEE OR SEARCH CLASS:

33, Geometrical Instruments, for straight-line-light-ray-type gun sights and aerial bomb sights.

89, Ordnance, for ordnance devices, per se, or the combination of significant ordnance structure combined with a calculating device.

250, Radiant Energy, for photocell tracking devices.

348, Television, for television range finders and tracking devices.

356, Optics: Measuring and Testing, for range finders.

434, Education and Demonstration, for devices to instruct in navigation and situations encountered in time of war.

401 Bombing:

This subclass is indented under subclass 400. Subject matter including means to determine the position in space at which a bomb should be released from an airplane in order to hit a specific target.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclasses 229+ for light-ray-type aerial bomb sights.
- 89, Ordnance, subclasses 1.51+ for bomb dropping.
- 102, Ammunition and Explosives, subclass 384 for drop bombs with direction control means.

402 Toss:

This subclass is indented under subclass 401. Subject matter wherein the bomb is released from an airplane that is pulling up or out of a dive, resulting in the bomb being lobbed toward the target, and including means to determine when during that period of pulling up or out of a dive, the bomb should be released to hit the target.

403 Torpedo firing:

This subclass is indented under subclass 400. Subject matter including means to determine the course a torpedo must be given to hit a target.

- (1) Note. The calculations necessary to aim a torpedo differ from those found in subsequent subclasses in that they involve only considerations in a single plane.

SEE OR SEARCH CLASS:

- 114, Ships, subclasses 21.1 and 23-25 for control and steering of torpedoes.

404 Aiming (i.e., gun laying):

This subclass is indented under subclass 400. Subject matter including means to calculate the elevation and azimuth angles to be imparted to the gun in order to hit a given target.

- (1) Note. Included in the subclass are means to aim a gun at either a stationary or a moving target, from either a stationary or moving weapon.

- (2) Note. Factors taken into account in the calculations when aiming at a stationary target include ballistic factors for the ammunition used, wind factors, the number of times a gun has been fired, the necessary elevation for the shell to strike a target at a given range, etc.

- (3) Note. Factors taken into account in the calculations when aiming at a moving target, besides those mentioned in (2) include speed and course of the target, altitude, and the predicted future positions of the target.

- (4) Note. Means to calculate the course and roll or pitch angles for airborne weapons fixedly mounted on the airframe are excluded.

405 Mechanical computation:

This subclass is indented under subclass 404. Subject matter wherein the calculations are made solely by mechanical means.

- (1) Note. In this subclass, motors may be utilized to drive various cams, followers, or ballistic mechanisms, but they do not perform the calculations.

406 With tabular chart, scale or graph:

This subclass is indented under subclass 405. Subject matter including means to determine the results of the calculation from a tabular chart, scale, or graph.

- (1) Note. Included here are hand held calculating devices.

407 Compensating for weapon movement (e.g., tilt):

This subclass is indented under subclass 404. Subject matter including means for providing electrical signals or mechanical movements to the calculating device to compensate for weapon movement.

- (1) Note. Weapon movement included linear as well as angular motions, as on a moving platform.

- SEE OR SEARCH CLASS:
89, Ordnance, subclass 41 for training mechanisms.
- 408 Projectile flight time - fuse setting:**
This subclass is indented under subclass 400. Subject matter including means to calculate the time of flight of the projectile to the target and/or the fuse setting in view of the determined time.
- SEE OR SEARCH CLASS:
89, Ordnance, subclasses 27 and 28.05+ for firing devices.
102, Ammunition and Explosives, subclasses 206+ for settable fuses.
- 409 Parallax compensation:**
This subclass is indented under subclass 400. Subject matter including apparatus to derive a correction factor to compensate for errors in aiming due to the displacement of the director.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
404+, for subject matter of this subclass used in the generation of the aiming signals.
- 410 Coordinate conversion:**
This subclass is indented under subclass 400. Subject matter including apparatus to convert data from one system of coordinates to another, i.e., rectangular to polar.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
404+, for subject matter of this subclass used in the generation of the aiming signals.
- 411 With target tracking means:**
This subclass is indented under subclass 400. Subject matter including means to determine the position of a target and to continuously monitor or provide an indication of the target's position over a given period of time.
- (1) Note. The position of the target may be represented by determining its range and bearing only.
- SEE OR SEARCH CLASS:
244, Aeronautics, subclasses 76+ for aircraft control, and subclass 3.1 for missile control.
- 250, Radiant Energy, subclass 203 for photocell circuits including means to point at or follow an object.
- 342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclasses for radar tracking.
- 348, Television, subclasses 169+ for target tracking systems utilizing television systems.
- 356, Optics: Measuring and Testing, subclasses 3+ for range or height finding.
- 412 Position or course prediction:**
This subclass is indented under subclass 411. Subject matter including means to calculate the position or course of the target at a time in the future.
- 413 Calculating speed and direction:**
This subclass is indented under subclass 411. Subject matter including means to calculate the speed and/or direction of the target.
- 414 Range finding:**
This subclass is indented under subclass 400. Subject matter wherein the distance to the target is determined at a given instant or continuously in time.
- (1) Note. Included here are determinations of slant or ground range.
- SEE OR SEARCH CLASS:
348, Television, subclasses 135+ for television systems utilized for making measurements, including range.
- 356, Optics: Measuring, and Testing, subclasses 3+ for range- or height-finding devices utilizing optical elements.
- 415 With range rate change:**
This subclass is indented under subclass 414. Subject matter including apparatus to determine or indicate the rate at which the range is changing.

416 Range prediction:

This subclass is indented under subclass 414. Subject matter including means to indicate or calculate the range the target will be at a given time in the future.

417 Ballistic factor determination:

This subclass is indented under subclass 400. Subject matter including means to determine ballistic factors, or solving ballistic equations and not utilized in any specific system or application as provided for above.

418 Hand adjusted scale mechanism:

This subclass is indented under subclass 400. Subject matter wherein the calculations are made by scale mechanisms manipulated by and held in the human hand and not provided for in any of the above subclasses.

419 RECORD CONTROLLED CALCULATORS:

This subclass is indented under the class definition. Subject matter wherein the calculating machines performing the mathematical operations are combined with and/or controlled by means to sense or analyze data from a record.

- (1) Note. In this subclass, the calculating machines perform the various operations either mechanically or electromechanically.
- (2) Note. Calculating devices wherein the calculations are performed by only electrical means are classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

200+, for fluidic calculators.

SEE OR SEARCH CLASS:

700, Data Processing: Generic Control Systems or Specific Applications, appropriate subclasses for means to electrically perform particular arithmetic calculations and particular structure of such means.

420 Machine control:

This subclass is indented under subclass 419. Subject matter including means to control or determine what mathematical operations are to be performed.

- (1) Note. Included here are means to determine when to take a subtotal or total or when to switch from one operation to another, i.e., division to multiplication.
- (2) Note. Control of operations other than mathematical, such as printing or punching or record feeding are not classified here but in subclasses in this class directed to those specific operations, or data comparing.

421 Multiplying:

This subclass is indented under subclass 419. Subject matter wherein the mathematical operation performed is that of multiplication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

422, for dividing machines which are utilized to provide a check of the calculations made by multiplying machines.

422 Dividing:

This subclass is indented under subclass 419. Subject matter wherein the mathematical operation performed is that of division.

423 Subtraction:

This subclass is indented under subclass 419. Subject matter wherein the mathematical operation performed is that of subtraction.

424 Item distribution:

This subclass is indented under subclass 419. Subject matter including means to selectively distribute information from a sensing means to various output devices or accumulators or from accumulators to other output devices.

425 Sorting and accounting:

This subclass is indented under subclass 419. Subject matter in which accumulating or counting devices are combined with a sorting machine.

- SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, appropriate subclasses for sorting machines, per se.
- 426 Relay or contact type storing or accumulating:**
This subclass is indented under subclass 419. Subject matter wherein the element for storage or accumulation of data sensed from the record consists of electromechanical relays.
- SEE OR SEARCH CLASS:
365, Static Information Storage and Retrieval, subclass 166 for electromechanical relay storage or retrieval system, per se.
- 427 Differential mechanism, synchronous:**
This subclass is indented under subclass 419. Subject matter in which an accumulator or indicator element moves in synchronism with the relative movement of the record member and the sensing element, the accumulator or indicator element taking a differential position representative of the value sensed.
- 428 Differential mechanism, stop set:**
This subclass is indented under subclass 419. Subject matter wherein an interponent takes a setting according to a sensed value, and a storage device or accumulator then moves until stopped by the interponent to take a differential position representative of the sensed value.
- 429 Translators:**
This subclass is indented under subclass 419. Subject matter including means to convert coded indicia or data on the record into a different code format.
- SEE OR SEARCH CLASS:
341, Coded Data Generation or Conversion, appropriate subclasses for code converters, per se.
- 430 Key operators:**
This subclass is indented under subclass 419. Subject matter wherein the information sensed from a record member is entered in a keyboard controlled computing machine by devices which press on or actuate keys associated with or corresponding to the sensed information.
- 431 With data comparing:**
This subclass is indented under subclass 419. Subject matter including means to perform a comparison of two or more sets of data which may be carried upon records, accumulators, or other entry-receiving devices.
- SEE OR SEARCH CLASS:
340, Communications: Electrical, subclass 146.2 for digital comparators, per se.
- 432 With printing:**
This subclass is indented under subclass 419. Subject matter combined with a mechanism for printing the data sensed prior to making a calculation or the results of the calculation, or both.
- SEE OR SEARCH CLASS:
101, Printing, principally subclasses 2, 19, 20, 93, and 96 for record controlled printing devices wherein noncalculating structure is included.
- 433 With paper feeding:**
This subclass is indented under subclass 432. Subject matter including means to advance the paper upon which the sensed data or calculation results are printed.
- 434 With punching:**
This subclass is indented under subclass 419. Subject matter combined with a mechanism for punching the data sensed or the results of the calculation, or both.
- SEE OR SEARCH CLASS:
83, Cutting, subclasses 76.1+ for a record controlled cutting or punching machine.
234, Selective Cutting (e.g., Punching) subclasses 59+ for a record controlled selective punching machine.
- 435 CODED RECORD SENSORS:**
This subclass is indented under the class definition. Subject matter including machines for sensing or analyzing coded indicia on a record.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclasses 110+ for means to separate particularly marked cards.
- 250, Radiant Energy, subclasses 271+, 555+, and 556+ for photocell systems wherein a coded record is viewed by the system.
- 346, Recorders, for means to form coded records.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclass 2 for means to record on or reproduce from a card having a uniform magnetic coating.
- 365, Static Information Storage and Retrieval, subclasses 106 and 120 for storage and retrieval of information, and subclasses 185.01+ for floating gate memory storage (e.g., flash memory).
- 382, Image Analysis, subclasses 181+ for pattern or character recognition, see Class 382, Lines With Other Classes and Within This Class.
- 434, Education and Demonstration, subclasses 119+ for devices to instruct individuals in cryptography wherein decoding devices may be employed.
- 483, Tool Changing, subclasses 8+ for a tool transfer means combined with a tool support or storage means, and including a control means responsive to tool location or identifying means.

436 Readout control:

This subclass is indented under subclass 435. Subject matter including apparatus to present the signals representing indicia analyzed in its correct sequence regardless of the direction or angle of scanning.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 462.32+, for a bar code reader including means for moving a light spot across the bar code or for moving the field of view of a detector across the bar code.
- 470, for an optical reader including means for scanning or orienting the coded indicia relative to the sensing structure.

437 Error checking:

This subclass is indented under subclass 435. Subject matter including apparatus to sense the coded indicia on a record and determine if it is being accurately interpreted.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 157 for means to test record strip sprocket holes.
- 714, Error Detection/Correction and Fault Detection/Recovery, subclasses 1+ for reliability and availability, fault recovery, locating, and avoidance in digital data processing systems, subclasses 799+ for error/fault detection techniques; and subclass 818 for missing-bit/drop-out detection

438 Testing:

This subclass is indented under subclass 435. Subject matter including apparatus to determine if the analyzing machine is operating correctly.

SEE OR SEARCH CLASS:

- 714, Error Detection/Correction and Fault Detection/Recovery, subclasses 799+ for error/fault detection techniques.

439 Particular sensor structure:

This subclass is indented under subclass 435. Subject matter including the particular type of structure utilized to sense the coded indicia on the record.

440 Multiple sensor:

This subclass is indented under subclass 439. Subject matter in which the coded indicia on the record is sensed by more than one complete sensing structure.

- (1) Note. Each sensing structure may include an array of or multiple sensing elements.
- (2) Note. Classification is not proper here if one of two sensing structures is that which senses timing marks.
- (3) Note. The sensing structures may be used to simultaneously sense separate

areas of the record or to sense the same areas at different points in time.

- (4) Note. The sensing structure may include diverse types.

441 Electrical contact:

This subclass is indented under subclass 439. Subject matter wherein the record is sensed by completing an electrical circuit at different locations on the record where coded indicia exist, each location representative of and conveying different information.

- (1) Note. Including here are devices that complete an electrical circuit through conductive surface marks placed on the record.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 492, for records, per se, encoded with conductive markings.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclass 46 for means to complete a circuit in accordance with a patterned sheet.

442 Perforated:

This subclass is indented under subclass 441. Subject matter wherein the electrical circuit is completed through perforations in the record.

443 Static sensed:

This subclass is indented under subclass 442. Subject matter wherein all the perforations in the record are sensed simultaneously while the record is held stationary.

444 Electromechanical:

This subclass is indented under subclass 439. Subject matter wherein the sensing structure includes a mechanical sensing element that moves in accordance with coded indicia on or in the record to close one of a plurality of electrical switches, the particular switch closed representative of and conveying different information.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclass 46 for means to complete a circuit in accordance with a patterned sheet.

445 Perforated record:

This subclass is indented under subclass 444. Subject matter wherein the sensing element moves through or penetrates the record at points where perforations exist.

446 Sensing element in continuous contact with record:

This subclass is indented under subclass 445. Subject matter wherein the sensing element is held in continuous contact with the record.

447 Array:

This subclass is indented under subclass 445. Subject matter including a plurality of sensing elements forming a two-dimensional array.

448 Raised or depressed portions on record:

This subclass is indented under subclass 444. Subject matter wherein the sensing element is moved in accordance with raised or depressed portions of the record, the raised or depressed portions representing the coded indicia.

- (1) Note. Included here are devices that move light shutter elements in accordance with raised or depressed portions. The movement of the shutter elements completing or breaking a light path between a light source and a photocell.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 490, for records, per se, encoded with material that projects from the plane of the record.

449 Magnetic:

This subclass is indented under subclass 439. Subject matter wherein the coded indicia is sensed magnetically.

- (1) Note. In this subclass the coded indicia is placed on the record as discrete elements of magnetic material. If the magnetic material is placed on the record as a continuous coating upon which informa-

tion is subsequently impressed, classification is in Class 360.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

493, for records, per se, encoded with magnetic material.

SEE OR SEARCH CLASS:

341, Coded Data Generation or Conversion, subclass 15 for magnetic pattern reading type analog to digital converters.

360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for particular recording or reproducing structure and particular records.

365, Static Information Storage and Retrieval, subclass 97 for read only memories.

450 Strengthen or diminish field or flux:

This subclass is indented under subclass 449. Subject matter wherein a sensing magnetic field or flux is increased or decreased in intensity in accordance with elements on or in the record representative of coded indicia.

451 Capacitive:

This subclass is indented under subclass 439. Subject matter wherein the coded indicia is sensed by forming a capacitor with the sensing elements.

452 Pneumatic:

This subclass is indented under subclass 439. Subject matter wherein the coded indicia on the record is sensed by detecting variations in fluid pressure and converting such variations to an electrical signal.

(1) Note. The record is in the form of a perforated record, with the fluid penetrating areas where perforations exist.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

201, for fluid sensors utilized in fluid amplifiers.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 81+ for fluid pressure switches.

453 Mechanical:

This subclass is indented under subclass 439. Subject matter wherein the coded indicia is sensed and represented by entirely mechanical means.

(1) Note. Included here are devices such as Bowden wires which actuate some other mechanical element.

454 Optical:

This subclass is indented under subclass 439. Subject matter wherein the coded indicia on the record is sensed by transmitting light through or reflecting light from the record surface, the light detected being converted into an electrical signal representative of the indicia.

(1) Note. The subject matter in this subclass and those indented hereunder differs from that found in Class 250 in that the light detected is converted to an electrical signal which is further processed by particular circuitry, the particular circuitry including the generating and utilization of timing and sync signals, the storage of signals, and means to perform counting operations.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 566+ for optical or pre-photocell systems only used to read coded records, and subclass 555 for photocell controlled circuits wherein a coded card is read.

455 Light level control:

This subclass is indented under subclass 454. Subject matter including means to maintain the light contrast or compensate for variations in the light contrast between the coded indicia to be sensed and the background level of the record.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.06, for a bar code reader including a light level adaptation means.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 205 wherein the intensity of the light illuminating an area is controlled.

456 Multiple column code:

This subclass is indented under subclass 454. Subject matter wherein the coded indicia utilizes more than one column to represent an item of intelligence.

457 Holographic:

This subclass is indented under subclass 454. Subject matter including means to sense a holographically encoded pattern.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.34, for a bar code reader wherein the light beam moving means includes a hologram.

SEE OR SEARCH CLASS:

348, Television, subclasses 40+ for holographic systems used for televising an object or scene.

359, Optics: Systems (Including Communication) and Elements, subclasses 1+ for holographic devices, per se.

458 Perforated record:

This subclass is indented under subclass 454. Subject matter wherein the coded indicia is in the form of perforations, and is sensed by detecting the light passing through the record.

459 Stationary:

This subclass is indented under subclass 458. Subject matter wherein the record is sensed entirely while it is stationary.

460 Matrix of cells:

This subclass is indented under subclass 459. Subject matter wherein the means to sense the record includes a matrix of light responsive devices.

(1) Note. Included here are photoelectric camera tubes.

461 One dimensional scan:

This subclass is indented under subclass 458. Subject matter including apparatus to scan the record along one dimension while the movement of the record provides the other scanning component.

462.01 Bar code:

This subclass is indented under subclass 454. Subject matter including means for sensing a coded indicia formed by a combination of bars or bars and spaces having different light reflective characteristics.

(1) Note. The white area between two black bars is referred to a white bar or a space.

(2) Note. Included here are bar code sensors for detecting the bar code or bar code readers having means, such as a photo-detector, to sense and convert the light reflected off a coded indicia into an electrical signal, and means, such as a processor with a decoder, to receive and convert that signal into representative information thereof.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 271 for invisible radiation responsive code readers and subclasses 555+, 566+ for photocell systems including means to illuminate a coded record.

358, Facsimile and Static Presentation Processing, subclasses 474 through 498 and 504-514 for scanner in a facsimile system.

359, Optics: Systems (Including Communication) and Elements, subclasses 196+ for optical structure of scanner using light deflection.

382, Image Analysis, subclass 140 for optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.02 Bar code having a plurality of bars with different heights (e.g., Postnet bar code):

This subclass is indented under subclass 462.01. Subject matter including means to read a bar code having tall and short bars.

- (1) Note. Postnet bar code is a bar code that has been used by The United States Postal Service to facilitate the automatic sorting and routing of mail pieces.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

494, for particular coded pattern reader.

SEE OR SEARCH CLASS:

382, Image Analysis, subclasses 101+ for mail processing, subclass 140 for optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.03 Circular bar code (e.g., concentric circles or sun burst):

This subclass is indented under subclass 462.01. Subject matter including means to read a bar code having a circular configuration.

- (1) Note. The code can be in the form of concentric circles where information varies with diameter or, a circular track where information varies with angular position.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

494, for a particular coded pattern reader.

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 140 for optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.04 Bar code with bars of more than two colors (e.g., multicolored bar code, multilevel gray):

This subclass is indented under subclass 462.01. Subject matter including means to read a bar code having at least three distinct light reflective characteristics.

- (1) Note. The space is counted as one of the different reflective levels of the bar; for example, two different colored bars besides the white space (e.g., red and blue and a white space, or a white space,

a black bar, and a gray bar) is classified herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.02, for a bar code having a plurality of bars of different heights (e.g., Postnet bar code).

462.03, for a circular bar code.

469, for a color coded indicia optical reader.

494, for a particular code pattern.

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 140 for optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.05 Means to read bar code on a transparent medium (e.g., film):

This subclass is indented under subclass 462.01. Subject matter including means to read a bar code on a medium through which light passes with minimal reflection, absorption, and distortion.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.02, for a bar code having a plurality of bars of different heights (e.g., Postnet bar code).

462.03, for a circular bar code.

462.04, for a bar code with bars of more than two colors

462.07, for a bar code reader with means to decode multiple types or formats of bar code symbols

494, for a particular code pattern.

SEE OR SEARCH CLASS:

348, Television, subclasses 96+ for a film scanner for a television application.

358, Facsimile, subclasses 506, 487 for transparency scanning in a facsimile system.

462.06 Light level adaptation:

This subclass is indented under subclass 462.01. Subject matter including means to maintain the light contrast or compensate for variations in the light contrast between the bar

code to be sensed and the background illumination of the record.

SEE OR SEARCH THIS CLASS, SUBCLASS:

455, for a coded record sensor with light level control.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 205 wherein the intensity of the light illuminating an area is controlled.

359, Optics: Systems (Including Communication) and Elements, subclasses 237+, 325 for optical modulator and demodulator.

462.07 Means to decode multiple types or formats of bar code symbols (e.g., UPC, JAN, EAN, etc.):

This subclass is indented under subclass 462.01. Subject matter including means to read more than one type of bar code.

(1) Note. UPC (Universal Product Code), JAN (Japan Article Numbering), and EAN (Europe Article Numbering) are one dimensional bar codes of different formats used for product inventory (e.g., to identify type, date, serial number, etc., of a product).

(2) Note. Types or formats of bar code include single-width bar code or multi-width bar code, dark bars on white background or white bars on dark background, one dimension or two dimension bar code, high density or low density bar code, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

494, for a particular code pattern.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 474 through 498 and 504-514 for scanner in a facsimile system.

382, Image Analysis, subclass 140 for an optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.08 Bar code location or selection:

This subclass is indented under subclass 462.01. Subject matter including means to determine the position or orientation of a bar code on an object.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclass 488 for scanning in a facsimile system with document position detection.

462.09 2-D bar code:

This subclass is indented under subclass 462.08. Subject matter including means to determine the position or orientation of a 2-D bar code on an object.

(1) Note. A two-dimensional bar code is a bar code consisting of several different rows of bar codes positioned one above the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.07, for a bar code reader with means to read 2-D bar code and 1-D bar code.

462.1, for decoding a 2D-bar code

462.11, for detecting a 2-D bar code using a CCD.

462.1 Means to decode a 2-D bar code:

This subclass is indented under subclass 462.01. Subject matter including means to read a two-dimensional bar code.

(1) Note. This subclass includes means to decode bar code symbols in either binary images (images represented in two levels, e.g., high or low) or gray-scale images (images consisting of an array of pixels which can have more than two values).

(2) Note. A pixel is the smallest distinguishable and resolvable area in an image. Many pixels in a line going in one direction are known as the primary or fast scan and others going in a perpendicular direction are known as the secondary or slow scan direction.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.07, for a bar code reader with means to read a 2-D bar code and a 1-D bar code.

462.09, for location of a 2-D bar code.

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 237 for gray level to binary image coding.

462.11 Including an imager (e.g., CCD or camera-type reader):

This subclass is indented under subclass 462.1. Subject matter wherein an image of a bar code is focused onto an image sensor such as a charge coupled device.

- (1) Note. A charge coupled device (CCD) is a semiconductor storage device in which an electrical charge is moved across the surface of a semiconductor by electrical control signals.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.41, for a bar code reader using CCD.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclass 482, 483, 513, and 514 for a solid-state scanner in a facsimile system.

382, Image Analysis, subclass 312 for image sensing using CCD.

462.12 Bar code stitching (e.g. forming a complete bar code from several partial scans):

This subclass is indented under subclass 462.01. Subject matter wherein the reader reconstitutes complete information of a bar code from two or more fragments of the bar code.

462.13 Combined with diverse art device (e.g., security tag deactivator):

This subclass is indented under subclass 462.01. Subject matter wherein a bar code reader is combined with a device that has a different utility and that does not aid the bar code reader in performing its function.

- (1) Note. Devices such as object detectors or range finders which are used to turn the bar code reader or focus the reader are perfecting features of the reader and are not classified herein.

462.14 Stationary bar code reader:

This subclass is indented under subclass 462.01. Subject matter wherein the object carrying the coded indicia is transported or moved toward a reading station where the reader is located.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

475, for an optical sensor with a feed mechanism for a coded record.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 474 through 498 and 505-514 for a scanner in a facsimile system.

462.15 Programming or computer interface feature:

This subclass is indented under subclass 462.01. Subject matter wherein the reader has a processor for reconfiguring itself to meet a specific need of other host systems having different operating characteristics.

SEE OR SEARCH CLASS:

710, Electrical Computers and Digital Data Processing Systems: Input/Output, appropriate subclasses for input/output data processing.

462.16 Bar width determination:

This subclass is indented under subclass 462.01. Subject matter wherein the reader measures the width of each bar of the bar code for decoding the bar code.

- (1) Note. Normally, widths of bar or space are defined as wide or narrow.

462.17 Using plural sensors:

This subclass is indented under subclass 462.16. Subject matter wherein more than one sensing means are used to distinguish different bar widths from each other.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclass 514 for scanning with plural sensors.

462.18 Using counter or timer:

This subclass is indented under subclass 462.16. Subject matter having a counter mean or a timer mean used to produce a series of counts or times representing the widths of the bars.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.27, for a clock generating or sampling circuit.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 23+, 31+ for signal discriminating by pulse coincidence or pulse width.

377, Electrical Pulse Counters, Pulses Dividers, or Shift Registers: Circuit and Systems, subclass 37, 111 for particular input circuits for counters.

462.19 Including count or time to binary conversion (e.g., Wide=1, Narrow=0):

This subclass is indented under subclass 462.18. Subject matter including a circuit to receive the series of counts or times and produce a series of ones and zeros with one number representing a wide element and the other the narrow element.

462.2 Aiming or positioning adjunct (e.g. viewfinder, pointer, or positioning aid):

This subclass is indented under subclass 462.01. Subject matter including means for assisting the user of a reader in positioning either the reader or a coded object in the correct position for reading the code.

SEE OR SEARCH CLASS:

396, Photography, subclasses 378+ for photographing using a viewfinder with selective or adjustable viewfinder field.

462.21 Using spotter beam:

This subclass is indented under subclass 462.2. Subject matter wherein the positioning aid is a visible light projector which produces a light pattern indicating the reading zone of the reader.

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 322 for image sensing using a single spot scanner.

462.22 Extended reader working range (e.g., multiple focal planes):

This subclass is indented under subclass 462.01. Subject matter including means to read a bar code at a wide range of different distances from the reader.

(1) Note. The working range is the area around the focal plane that can yield a successful decoding. To be classified herein, the range must exceed the range of the standard reader.

SEE OR SEARCH CLASS:

396, Photography, subclasses 121+ for a camera with plural focusing or range finding areas.

462.23 Auto-focusing:

This subclass is indented under subclass 462.22. Subject matter including a lens system controlled by an electrical motor (such that a light beam is properly focused for accurate bar code reading) in response to the working range of the bar code reader.

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 255 for focus measuring or adjustment by image enhancement or restoration.

462.24 Using an imager (e.g., CCD or camera-type reader):

This subclass is indented under subclass 462.23. Subject matter wherein an image of a bar code is focused onto an image sensor such as a charge coupled device.

(1) Note. A charge coupled device (CCD) is a semiconductor storage device in which an electrical charge is moved across the

surface of a semiconductor by electrical control signals.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.41, for a bar code reader using CCD.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclass 482, 483, 513, and 514 for a solid-state scanner in a facsimile system.

382, Image Analysis, subclass 312 for image sensing using CCD.

462.25 Reader processing circuitry:

This subclass is indented under subclass 462.01. Subject matter including specific circuitry that receives a signal from the photo-detector and converts it into a representative information signal of the bar code.

SEE OR SEARCH CLASS:

358, Facsimile and Static Presentation Processing, subclasses 474 through 498 and 505-514 for a scanner in a facsimile system.

382, Image Analysis, subclass 140 for optical imager or reader for reading MICR data, subclasses 182+ for pattern recognition, and subclasses 312+ for image sensing.

462.26 Amplitude control (e.g., automatic gain control):

This subclass is indented under subclass 462.25. Subject matter including a circuit element to control the ratio of the output of an amplifier to its inputs.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 178+, 306+ for signal converting, shaping, or generating with amplitude control.

330, Amplifiers, subclasses 278+ for a semiconductor amplifying device with gain control.

455, Telecommunications, subclasses 232.1+, 355 for gain control of signals at a receiver.

462.27 Analog to square wave converter (e.g., digitizer, binarizer, slicer):

This subclass is indented under subclass 462.25. Subject matter including means for changing a continuously variable voltage signal from the photo-detector into a signal having only two discrete levels, one representing the bars and the other, the spaces.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for signal converting, shaping or generating.

341, Coded Data Generation or Conversion, subclass 200 for a quantizer.

358, Facsimile and Static Presentation Processing, subclass 465 and 466 for thresholding an image signal to determine the level (black or white) of the image.

382, Image Analysis, subclasses 270+ for image restoration using variable threshold, gain, or slice level of an image signal.

462.28 Clock generating or sampling circuit (e.g., synchronizing):

This subclass is indented under subclass 462.25. Subject matter including means for generating a predetermined timing pulse used to control the signal received from the photo-detector.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 33, 91+ for sampling circuits and subclasses 164, 291+ for clock or pulse generating circuits.

360, Dynamic Magnetic Information Storage or Retrieval, subclass 51 for similar clock recovery systems used in magnetic recorders.

713, Electrical Computers and Digital Processing Systems, subclasses 500 through 503 for clock, pulse, or timing signal generation or analysis.

462.29 Noise reduction circuit (e.g., electrical filter):

This subclass is indented under subclass 462.25. Subject matter including electrical filter (such as low pass, band pass, or high pass filter) to eliminate an unwanted signal.

SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 551+ for unwanted signal suppression.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300 through 323 and 819 for digital or analog filtering respectively of a data signal.

462.3 Scanner power on/off:

This subclass is indented under subclass 462.01. Subject matter including circuitry to control the activation of the reader.

- (1) Note. Examples of subject matter found herein are means to deactivate (e.g. automatic turn off) the scanner after a successful decoding is obtained.

SEE OR SEARCH CLASS:

- 323, Electricity Power Supply or Regulations Systems, appropriate subclasses for power supply control.

462.31 Including object detection:

This subclass is indented under subclass 462.3. Subject matter including a circuit to determine if a code indicia is within reading range of the reader and to control and activate the reader in response to a detected signal.

462.32 Specific scanning detail (e.g., scanner with a specific scanning field of view):

Subject matter under 462.01 including means to either move a light spot across the code (flying spot scanner) or to move the field of view of a detector across the code (scanning the field of view) or to do both (retro scanner).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 470, for an optical reader including means for scanning or orienting the coded

indicia relative to the sensing structure.

SEE OR SEARCH CLASS:

- 250, Radiant Energy subclasses 271+, 555+, 566+ for photocell systems wherein a coded record is viewed by the system and subclasses 234+ for means for moving an optical element.
- 348, Television, subclasses 195+ for mechanical scanners useful in television.
- 358, Facsimile and Static Presentation Processing, subclasses 474 through 498 for facsimile-type scanners.
- 359, Optics Systems (Including Communications) and Elements, subclasses 196+ for light deflection systems useful in scanning.
- 382, Image Analysis, subclasses 312+ for image sensing.

462.33 Moving a spot of light (e.g., flying spot scanner):

This subclass is indented under subclass 462.32. Subject matter wherein a light beam is caused to move across the code.

- (1) Note. The sensors field of view may be either fixed or moved with the light.

SEE OR SEARCH CLASS:

- 359, Optics Systems (Including Communications) and Elements, subclasses 196+ for light deflection systems useful in scanning.

462.34 Hologram

This subclass is indented under subclass 462.33. Subject matter wherein the light beam moving means includes a hologram.

- (1) Note. A hologram is an interference pattern produced by a split coherent beam of light.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 457, for an optical coded record sensor including means to sense a holographically encoded pattern.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 15+ for using a hologram as an optical element.

462.35 Having a transmissive optical element (e.g., lens, prism, or aperture):

This subclass is indented under subclass 462.33. Subject matter wherein the light is caused to move across the code indicia by passing the light through an element such as lens, prism, or aperture.

- (1) Note. A transmissive optical element is an element that permits the passage of lights rays.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 209+ for light deflection using a transmissive moving element.

462.36 Using a moving mirror:

This subclass is indented under subclass 462.33. Subject matter wherein the light beam is caused to move by reflecting a beam of light off a moving mirror.

- (1) Note. A moving mirror can be a nonrotating (e.g. oscillating or reciprocating) or rotating mirror. Included in this subclass is a nonrotating mirror.
- (2) Note. Oscillation is a back and forth movement of a limited arc about a pivot; reciprocation is a linear back and forth motion.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 212+ for light deflecting systems using a moving reflector.

462.37 Pattern mirror detail for nonrotating mirror:

This subclass is indented under subclass 462.36. Subject matter including a single nonrotating (e.g., oscillating or reciprocating) mirror which receives the light from a light source

and reflects that light in form of a more complex light pattern to the code to be read.

- (1) Note. A mirror that moves back and forth in a limited arc is an oscillating mirror; a mirror that linearly moves back and forth is a reciprocating mirror.
- (2) Note. The complex light pattern is used to capture a bar code at different angles.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.4, for pattern mirror details in rotating polygon mirror system.

462.38 Rotating:

This subclass is indented under subclass 462.36. Subject matter including a mirror which is mounted to turn completely about an axis normally in only one direction (e.g., clockwise).

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclass 226 for a deflecting system using a rotating reflector.

462.39 Polygon:

This subclass is indented under subclass 462.37. Subject matter wherein the mirror has three or more faces or sides that are parallel to the axis of rotation.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 216+ for a deflecting system using a multifaceted rotating element.

462.4 Pattern mirror detail for rotating mirror:

This subclass is indented under subclass 462.39. Subject matter including a polygon which receives the light from a light source and reflects that light in form of a more complex light pattern to the code to be read.

- (1) Note. The complex light pattern is used to capture a bar code at different angles.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
462.37, for a pattern mirror in a nonrotating mirror system.

462.41 Using an imager (e.g., CCD):

This subclass is indented under subclass 462.01. Subject matter wherein an image of the bar code is focused onto an image sensor such as a charge coupled device.

- (1) Note. A charge coupled device (CCD) is a semiconductor storage device in which an electrical charge is moved across the surface of a semiconductor by electrical control signals.
- (2) Note. The sensor normally has a set of discrete photosensitive cells or pixels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
462.11, for detecting a 2-D bar code using a CCD.
462.24, for extending the working range of the bar code reader using a CCD.

SEE OR SEARCH CLASS:

- 348, Television, subclasses 298+ and 311+ for cameras with CCD-type image sensor.
358, Facsimile and Static Presentation Processing, subclass 482, 483, 513, and 514 for a facsimile scanner using CCD.
382, Image Analysis, subclass 312 for image sensing using CCD.

462.42 Illumination detail (e.g., LED array):

This subclass is indented under subclass 462.41. Subject matter including details of the light source.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclass 553 for an array of solid state light sources.
362, Illumination, subclasses 3+ for photographic lighting and subclass 800 for LEDs.

462.43 Specified housing or mounting detail:

This subclass is indented under subclass 462.01. Subject matter including detail about a container or a container mounting of the reader.

SEE OR SEARCH CLASS:

- 382, Image Analysis, subclasses 312+ for image sensing.

462.44 Body attached:

Subject matter under 462.43 including means for mounting the reader on a human body.

462.45 Hand-held (e.g., portable):

This subclass is indented under subclass 462.43. Subject matter wherein the housing is sized to be easily carried and used by an operator.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclass 473 for a hand-held scanner.
382, Image Analysis, subclasses 313+ for hand-held image sensing.

462.46 Wireless link (e.g., RF, IR, etc.):

This subclass is indented under subclass 462.45. Subject matter wherein the reader includes a wireless communication means for transmitting data to a host computer or a processor.

- (1) Note. A wireless link includes radio frequency, infrared, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 472.02, for a hand-held reader of coded indicia using a wireless link.

462.47 Interchangeable scanning head or detachable handle:

This subclass is indented under subclass 462.45. Subject matter wherein a scanning head can be easily detached from the body of the reader whereby it can be rotated 180 degrees (e.g. for left- and/or right-handed use) or wherein the grip of the reader is configured to accept a different scanning head.

462.48 Trigger detail:

Subject matter under 462.45 including detail of a manually actuated control element that initiates the reading of a bar code.

462.49 Wand-type reader (e.g., manual scan):

This subclass is indented under subclass 462.45. Subject matter wherein the reader is in the shape of a pen and is manually moved across the bar code for reading.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

472.03, for a wand-type reader for coded indicia.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 179+ for display peripheral interface input devices using stylus.
- 358, Facsimile and Static Presentation Processing, subclass 478 for a stylus-type scanner in a facsimile system.

468 Invisible:

This subclass is indented under subclass 454. Subject matter wherein the coded indicia is in the form of invisible markings which are made visible by illumination by an appropriate source and including means to analyze signals representative of the indicia.

- (1) Note. Included here are devices that sense records encoded with fluorescent, etc. material, which records are illuminated by infrared or ultraviolet light sources.
- (2) Note. The subject matter in this subclass and those indented hereunder differs from that found in Class 250 in that the light detected is converted to an electrical signal which is further processed by particular circuitry, the particular circuitry including the generating and utilization of timing and sync signals, the storage of signals, and means to perform counting operations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

491, for records encoded with fluorescent, phosphorescent, or other radiation emitting substance.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 336.1+ for invisible radiant energy responsive systems, per se, and subclass 271 for invisible coded record sensors, wherein no processing circuitry as outlined in (2) Note is included.

469 Color coded:

This subclass is indented under subclass 454. Subject matter including means to detect and differentiate different color markings on the record, the different colors representing different information.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

462.04, for a colored bar code reader.

470 With scanning of record:

This subclass is indented under subclass 454. Subject matter including means to scan the coded indicia on the record or to properly orient the coded indicia projected to the sensor.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 234+ for means for moving optical systems.
- 348, Television, subclasses 96+ for film, disc, or card scanning.
- 358, Facsimile and Static Presentation Processing, subclasses 474 through 498 for facsimile scanning systems.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 196+ for rotating or oscillating elements which produce light deflection.
- 386, Television Signal Processing for Dynamic Recording or Reproducing, subclasses 42+ and 128+ for photographic television recording apparatus including scanning means.

471 Cathode-ray tube:

This subclass is indented under subclass 470. Subject matter wherein the means to scan includes a cathode-ray tube.

SEE OR SEARCH CLASS:

- 358, Facsimile and Static Presentation Processing, subclass 485 for means to scan a document with a cathode-ray tube.
- 386, Television Signal Processing for Dynamic Recording or Reproducing, subclass 130 for photographic television recording apparatus including cathode-ray tube.

472.01 Hand-held (e.g., portable):

This subclass is indented under subclass 454. Subject matter wherein the housing is sized to be easily carried and used by an operator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.45, for a hand-held bar code reader.

472.02 Wireless link (e.g., RF, IR, etc.):

This subclass is indented under subclass 472.01. Subject matter wherein the reader includes a wireless communication means (e.g. RF, IR, etc.) for transmitting data to a host computer or a processor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.46, for a portable bar code reader with a wireless link.

472.03 Wand-type reader (e.g., manual scan):

This subclass is indented under subclass 472.01. Subject matter wherein the reader is in the shape of a pen and is manually moved across the code indicia for reading.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.49, for a wand-type bar code reader.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 179+ for display peripheral interface input devices using stylus.
- 358, Facsimile and Static Presentation Processing, subclass 478 for stylus-type scanner in facsimile system.

473**Light pipes:**

This subclass is indented under subclass 454. Subject matter wherein light fibers are utilized to convey light from a light source to the coded indicia on the record and/or from the coded indicia to a sensor.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 227.11+ for light conducting rods utilized as pre-photocell optical systems.
- 385, Optical Waveguides, appropriate subclasses for light conducting rods, per se.

474**Synchronization:**

This subclass is indented under subclass 435. Subject matter including means to activate the sensing machine upon detection of a record and at times related to the speed at which the record is fed past the sensing machine.

- (1) Note. Included here is structure to sense timing marks on a record.
- (2) Note. Included here is structure to synchronize the transfer of signals from the sensing mechanism to other circuitry.

SEE OR SEARCH CLASS:

- 375, Pulse or Digital Communications, subclasses 354+ for synchronization systems, per se.

475**Feed mechanisms:**

This subclass is indented under subclass 435. Subject matter including means to automatically insert and/or transport the record past the sensing machine.

SEE OR SEARCH THIS CLASS, SUBCLASS:

462.14, for a fixed station bar code reader.

SEE OR SEARCH CLASS:

- 242, Winding, Tensioning, or Guiding, for apparatus to wind web material such as a tape.
- 271, Sheet Feeding or Delivering, appropriate subclasses for particular sheet feeding mechanisms.

- 476 Control circuits:**
This subclass is indented under subclass 475. Subject matter including circuits to control the operation of the transport means.
- (1) Note. Included here are means to control the speed with which the record moves past the sensing machine.
- 477 Direction:**
This subclass is indented under subclass 476. Subject matter including means to control the direction in which the record passes the sensing machine.
- 478 Pneumatic feed:**
This subclass is indented under subclass 475. Subject matter wherein the record is transported under the control of a suction force that maintains the record in contact with a motive means, or the record is inserted into an evacuated space causing the record to move in the desired direction.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, sub-classes 4.01+ and 11+ for pneumatic separators, subclasses 90+ for pneumatic feeding devices, and subclasses 194+ for pneumatic conveyors.
406, Conveyors: Fluid Current, appropriate subclasses for particular devices to pneumatically move articles.
- 479 Carriage:**
This subclass is indented under subclass 475. Subject matter wherein the record is placed in or on a support that is moved past the sensing machine.
- 480 Direction reverse:**
This subclass is indented under subclass 475. Subject matter wherein the means to transport the record includes means to reverse the direction in which the record is traveling after it has passed the sensing machine.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, sub-classes 184+ and 255 for means to intermittently advance a sheet.
- 481 Intermittent feed:**
This subclass is indented under subclass 475. Subject matter including means to progressively step the record past the sensing machine.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, sub-classes 114+ and 266 for means to intermittently advance a sheet.
- 482 Hand feed:**
This subclass is indented under subclass 435. Subject matter wherein a single record is manually presented to the sensing machine.
- 483 Guides:**
This subclass is indented under subclass 435. Subject matter including means to control the direction of movement and/or position of the record as it is transported through the sensing machine.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, sub-classes 184+ and 255 for means to change direction of sheet travel or its orientation during delivery.
- 484 Adjustable:**
This subclass is indented under subclass 483. Subject matter wherein the means to control is adjustable to accommodate different size records.
- 485 Aligning records:**
This subclass is indented under subclass 483. Subject matter including means to position the record such that each item of coded indicia on the record is placed in proper orientation relative to the sensing device to insure accurate detection of the coded indicia.
- SEE OR SEARCH CLASS:
271, Sheet Feeding or Delivering, sub-classes 226+ for means to align the sheet.
- 486 Holding devices:**
This subclass is indented under subclass 435. Subject matter including means to retain the record in a fixed position or configuration as it is being sensed.

487 RECORDS:

This subclass is indented under the class definition. Subject matter including an object containing coded indicia adapted to be read by a machine.

- (1) Note. The term coded indicia is meant to include markings, symbols, or combinations thereof, that represent numbers or letters of the alphabet.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, appropriate subclasses for particular card structure, in particular subclass 360 for sheet carrying indicia.
- 206, Special Receptacle or Package, subclass 459 for receptacles containing indicia which may be in code form.
- 250, Radiant Energy, for X-rays, per se.
- 283, Printed Matter, appropriate subclasses for particular items containing different forms of printed matter.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 1+ for holograms.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 131+ for magnetic record mediums.

488 Laminated:

This subclass is indented under subclass 487. Subject matter wherein the record includes at least two substantially planar layers affixed together.

SEE OR SEARCH CLASS:

- 428, Stock Material or Miscellaneous Articles, appropriate subclasses for laminated articles, per se.

489 Perforated:

This subclass is indented under subclass 487. Subject matter wherein the coded indicia is in the form of perforations in the record.

490 Projections:

This subclass is indented under subclass 487. Subject matter wherein the coded indicia includes areas on the record that project above the plane or surface area of the record.

491 Fluorescent, phosphorescent, radiation emitting:

This subclass is indented under subclass 487. Subject matter wherein the coded indicia is placed on the record by the use of fluorescent, phosphorescent, or a radiation emitting substance.

492 Conductive:

This subclass is indented under subclass 487. Subject matter wherein the coded indicia on or within the record is formed from conductive materials or substances.

493 Magnetic:

This subclass is indented under subclass 487. Subject matter wherein the coded indicia on or within the record is formed from magnetic materials or substances.

SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, subclass 15 for magnetic pattern reading type analog to digital converters.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 131+ for records having a continuous coating of magnetic material upon which information is recorded.

494 Particular code pattern:

This subclass is indented under subclass 487. Subject matter wherein different items of information are represented by particular shaped patterns or arrangements of such patterns.

495 Templates and guides:

This subclass is indented under subclass 487. Subject matter including aids to scan the record in the correct place or to place coded indicia on the record in the correct place.

CROSS-REFERENCE ART COLLECTIONS**900 MEANS TO AFFIX BAR CODE (E.G., ATTACHING, ETCHING, COATING, PRINTING, ETC.):**

This subclass is indented under the class definition. Cross reference art collection including means to provide a bar code on a medium (e.g., attaching, etching, coating, printing, etc.).

901 BAR CODE READER SPECIALIZED TO READ CODE ON A HIGHLY REFLECTIVE SURFACE:

This subclass is indented under the class definition. Cross reference art collection wherein a bar code reader includes means to process or accommodate light coming from a highly reflective surface.

the sensor are enclosed within a device capable of being held in the human hand.

END

FOREIGN ART COLLECTIONS

The definitions below correspond to abolished subclasses from which these collections were formed. See the Foreign Art Collection Schedule of this Class for specific correspondences. [Note: the titles and definitions for indented art collections include all the details of the one(s) that are hierarchically superior.]

FOR 100 Bar code:

Foreign art collections including means to sense coded indicia formed by a combination of bars having different reflective characteristics, spacings, and/or widths.

FOR 101 Bar width detection:

Foreign art collections including means to detect and indicate the width of the bars and/or the spacing between the bars.

FOR 102 Radially configured:

Foreign art collections including subject matter wherein the bars are arranged in a circle and located at points or various distances along the radii of the circle.

FOR 103 Color:

Foreign art collections including subject matter wherein the different reflective characteristics include three or more colors.

FOR 104 Timing:

Foreign art collections including means to synchronize the sensing apparatus in order to distinguish each indicia position.

FOR 105 Rotating prisms or mirrors:

Foreign art collections including prisms or mirrors for scanning or orienting the coded indicia relative to the sensing structure.

FOR 106 Hand held:

Foreign art collections including subject matter in which the structural elements of